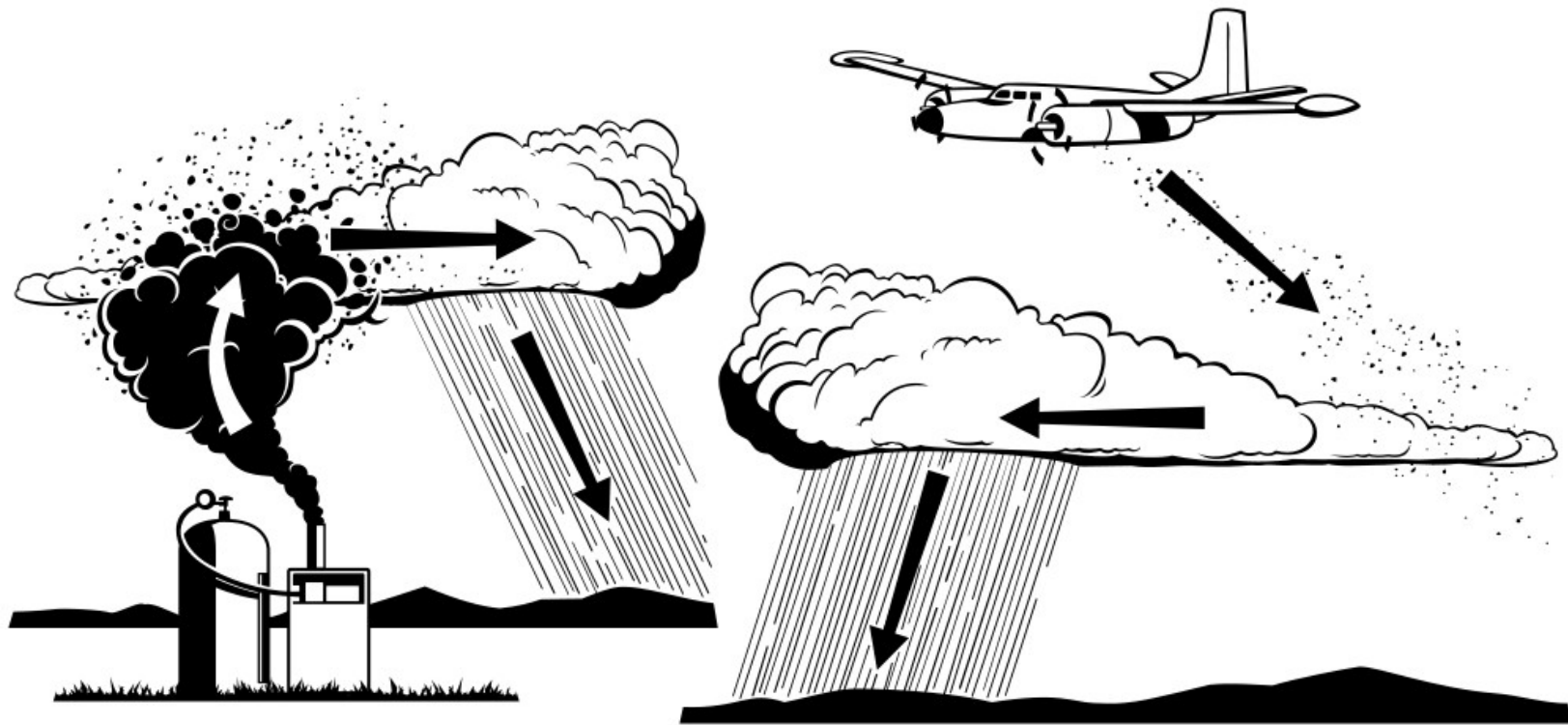


Cloud Seeding Study Suggests We Could Boost Rain And Snow By 15 Percent

by MARISSA FESSENDEN | SMITHSONIAN.COM | JANUARY 2, 2015



After comparing the effect of cloud seeding generators on snowfall in two nearby mountain ranges, researchers think a program might help

When drought dries out the land, the clouds, full of water, that hover over the landscape and dump their moisture elsewhere are especially frustrating. If only they would rain! And after decades of cloud-seeding attempts, the most extensive study of its effects has just come up with some answers about how well that might work, [writes Dave Zook for High Country News](#).

The basic idea behind cloud seeding is that rain needs particles, or nuclei, to condense around before it can fall. Often those particles are dust in the atmosphere. We artificially seed clouds by releasing microscopic particles of silver iodide into storms using generators on the ground or airplanes. The idea fires people up: Rainmaking is practiced around the world and was investigated as [a weapon in the Cold War](#).

Still, cloud seeding has long been a domain for the hopeful, [writes Christie Aschwanden for FiveThirtyEight](#):

[T]here's still more speculation than definitive evidence that cloud seeding works. Early experiments produced a few spectacular results that catapulted expectations beyond what the science had shown, says Daniel Breed, a meteorologist at the National Center for Atmospheric Research (NCAR) in Boulder, Colo. "There was all this excitement extrapolated into very optimistic claims about how effective it would be," he says.

Measuring the effects of cloud seeding has proven difficult because there's so much natural variability in precipitation. "You're looking for a small signal in a very large range," Breed says.

In 2003, [a National Academies panel proclaimed](#) that there wasn't much evidence that cloud seeding works and that in fact, all "large-scale operational weather modification programs would be premature," based on the available science. Wyoming researchers decided to more rigorously evaluate cloud seeding, and the results of a decade worth of work are now out.

Six winters' worth of snow in two mountain ranges in southern Wyoming were evaluated. [The researchers report](#) that in ideal conditions, seeding increased winter precipitation by 5 to 15 percent. A cloud seeding program in the region could cost \$27 to \$214 per acre-foot of water in a low cost scenario and \$53 to \$427 per acre-foot in a high-cost scenario.

While the report's results might seem small, they are more promising and extensive than any other cloud seeding experiments have been before. "Existing cloud seeding programs may be taken more seriously (now) by water managers and agencies affected by ongoing drought conditions," Marc Pitchford, executive director of the atmospheric science division at a weather modification program, the Desert Research Institute, told *High Country News*.

In the future, cloud seeding won't solve our water problems, but it could be a tool we use. "'It's not a drought-busting technology, but it can increase a bad year and make a normal year better,'" Chuck Cullom, who is a program manager for a 336-mile canal network in Arizona told *Environment & Energy Daily* ([via Wyofile.com](#)).

Still, this study doesn't give a definitive answer about worth of this idea. Any actual program would have to grapple with the cost of cloud seeding, the challenges less-than-ideal conditions, and the complications in the analysis of such studies. There are a lot of factors that go into weather. But the study does show that there's value in doing more research.

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